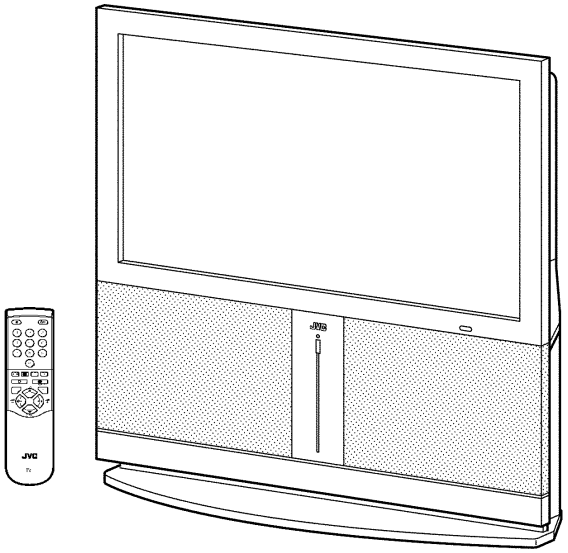
JVC

SERVICE MANUAL

PLASMA WIDE TELEVISION

BASIC CHASSIS
MF

AV42PD20ES



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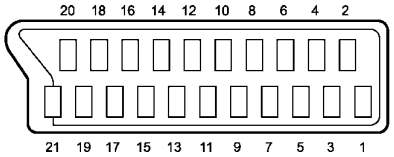
SPECIFICATIONS

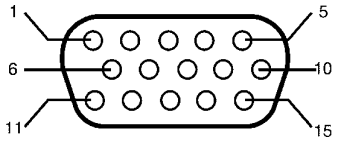
Item		CONTENTS
Dimensions (W × H × D)		104.8cm × 114.0cm × 35.8cm
Mass		58.0kg
TV RF System		CCIR B/G, I, D/K, L ,L'
Colour System		PAL / SECAM & NTSC 3.58 / NTSC 4.43 (NTSC play back only)
Sound System		A2 (B/G, D/K), NICAM (B/G, I, D/K, L)
Teletext System		Fastext(United Kingdom system), TOP(German system), WST(World standard system)
Receiving Frequency	VHF	47MHz ~ 470MHz
	UHF	470MHz~862MHz
	French CATV	116MHz~172MHz / 220MHz~469MHz
Intermediate Frequency	VIF Carrier	38.9MHz(B/G, D/K, I, L) / 33.95MHz(L')
	SIF Carrier	33.4MHz(5.5MHz : B/G) / 32.9MHz(6.0MHz : I) 32.4MHz(6.5MHz : D/K, L) / 40.45MHz(6.5MHz : L')
Colour Sub Carrier	PAL	4.43MHz
	SECAM	4.40625MHz / 4.25MHz
	NTSC	3.58MHz / 4.43MHz (play back)
Power Input		AC 220V~240V , 50Hz
Power Consumption		380W ,2A (Max.) / 280W (Avg.) / 5.5w (Stand by)
PDP Size	Visible area	105.7cm, [Measured diagonally]
Speaker		8cm round × 2, 16cm round × 1 (sub woofer) / 4Ω
Audio Output	Rated	5W + 5W (L+R) / 20W(sub woofer)
Antenna Input		75 Ω unbalanced, Coaxial
Input / Output Terminals	EXT-1	21-pin Euro connector (SCART socket), Video, Audio L/R, RGB signal input are available TV broadcast output (Video and Audio L/R) are available
	EXT-2	21-pin Euro connector (SCART socket), S-Video, Video, Audio L/R, RGB signal input are available AV selector (TV LINK) function is available
	EXT-3	21-pin Euro connector (SCART socket), Video, Audio L/R, RGB signal input are available
	EXT-4	RCA pin type, S-Video, Video and Audio L/R signal input are available
	Audio output	RCA pin type, Variable audio L/R output are available
PC Input		D-Sub 15pin × 1 / signal (R, G, B / H&V SYNC)
Headphone Jack		Stereo minijack (φ 3.5mm)
Remote Control Unit		RM-C59 (AAA/R03 dry cell battery × 2)

Design and specifications are subject to change without notice.

[21pin Euro connector pin assignment]



[PC IN connector]
(15pin D-Sub connector pin assignment)



■21-PIN EURO CONNECTOR (SCART socket) : EXT-1 / EXT-2 / EXT-3

(P-P= Peak to Peak, S-W= Sync tip to white peak, B-W= Blanking to white peak)

Pin	Signal Designation	Matching Value	EXT-1	EXT-2	EXT-3
1	AUDIO R output	500mV(rms), Low impedance	○ (TV OUT)	○ (LINE OUT)	NC
2	AUDIO R input	500mV(rms) High impedance	○	○	○
3	AUDIO L output	500mV(rms), Low impedance	○ (TV OUT)	○ (LINE OUT)	NC
4	AUDIO GND		○	○	○
5	GND (B)		○	○	○
6	AUDIO L input	500mV(rms), High impedance	○	○	○
7	B input	700mV(B-W), 75Ω	○	○	NC
8	FUNCTION SW (SLOW SW)	Low : 0V-3V, High : 8V-12V,High impedance	○	○	○
9	GND (G)		○	○	○
10	SCL1		NC	○	NC
11	G input	700mV(B-W), 75Ω	○	○	NC
12	SDA1		NC	○	NC
13	GND (R)		○	○	○
14	GND (Y_S)		○	○	NC
15	R / C input	R : 700mV(B-W), 75Ω C : 300mV(P-P) 75Ω	○ (only R)	○	○ (only C)
16	Ys input	Low : 0V - 0.4V, High : 1V - 3V, 75Ω	○	○	NC
17	GND(VIDEO output)		○	○	○
18	GND(VIDEO input)		○	○	○
19	VIDEO output	1V(P-P) (Negative going sync), 75Ω	○ (TV)	○ (LINE OUT)	NC
20	VIDEO / Y input	1V(P-P) (Negative going sync), 75Ω	○ (only VIDEO input)	○	○
21	COMMON GND		○	○	○

■15-PIN D-SUB CONNECTOR (PC IN connector)

Each type signal of computer

Model	Resolution	Horizontal Frequency [kHz]	Vertical Frequency [Hz]
IBM PC/AT compatible	640×480 (VGA)	31.5	59.9
		37.9	72.8
		37.5	75.0
		43.3	85.0
		51.1	100.4
		61.3	120.4
	800×600 (SVGA)	35.2	56.3
		37.9	60.3
		48.1	72.2
		46.9	75.0
		53.7	85.1
		63.0	99.8
		75.7	120.0
	1024×768 (XGA)	48.4	60.0
		56.5	70.1
		60.0	75.0
		68.7	85.0
		80.5	100.6
Apple Macintosh	640×480	35.0	66.7
	832×624	49.7	74.6
	1024×768	60.2	74.9
	1152×870	68.7	75.1

PC IN connector [15pin D-sub pin assignment]

Pin No.	Signal Name	Details
1	RED	Red video signal
2	GREEN	Green video signal
3	BLUE	Blue video signal
4	—	Not connected
5-8	GND	Signal earth
9	—	Not connected
10	GND	Signal earth
11	—	Not connected
12	—	————
13	HSYNC	Horizontal synchronous signal
14	VSYNC	Vertical synchronous signal
15	—	————

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

4. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.

5. If any repair has been made to the chassis, it is recommended that the PDP voltage setting should be checked or adjusted.

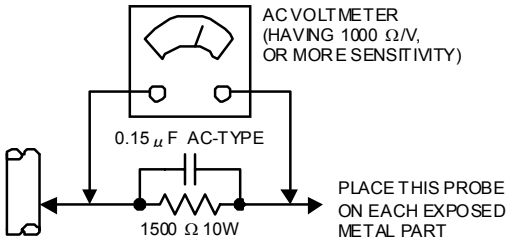
6. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

7. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1500V AC (r.m.s.) for a period of one second.
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 3.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

● **Alternate Check Method**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000Ω / V or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 3.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



SAFETY PRECAUTIONS [UK MODEL]

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessary be obtained by using replacement components rated for wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the Parts List of Service Manual may cause shock, fire, or other hazards.

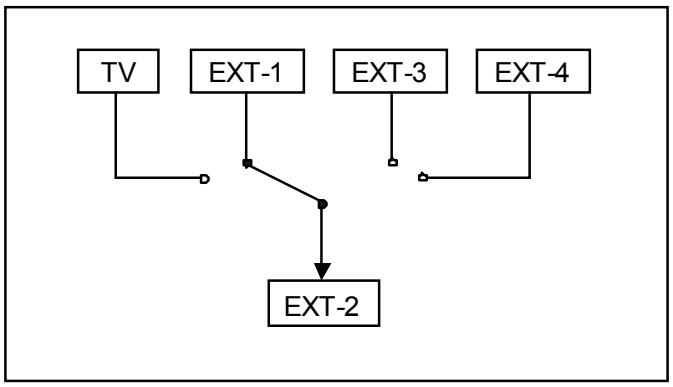
4. The leads in the products are routed and dressed with ties, clamps, tubing's, barriers and the like to be separated from live parts, high temperature parts, moving parts and / or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.

WARNING

1. The equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

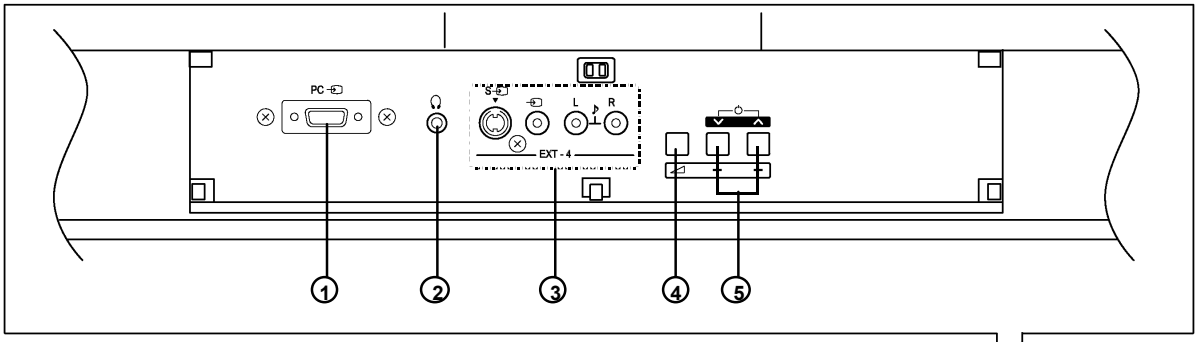
FEATURES

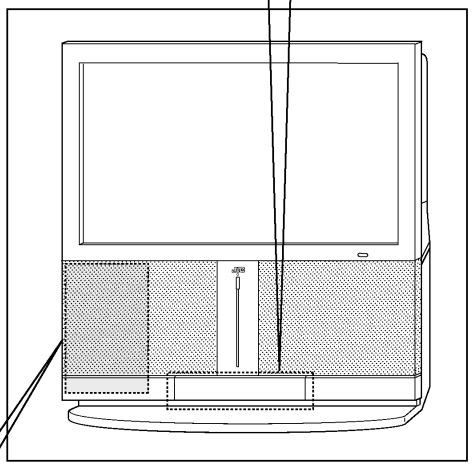
- New chassis design enable use of an interactive on screen control.
- The TELETEXT SYSTEM has a built-in FASTEXT (UK system), TOP (German system) and WST (world standard system) system.
- Pure FLAT PANEL reproduce fine textured.
- Because this TV unit corresponds to multiplex broadcast, users can enjoy music programs and sporting events with live realism.
- In addition, BILINGUAL programs can be heard in their original language.
- Built-in ECO (ECONOMY, ECOLOGY) sensor MODE.
  In accordance with the brightness in a room, the brightness and/or contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Users can make VCR dubbing of picture and sound by controlling the AV selector to select an optional source at the EXT-2 output shown in figure.



FUNCTIONS

FRONT TERMINAL

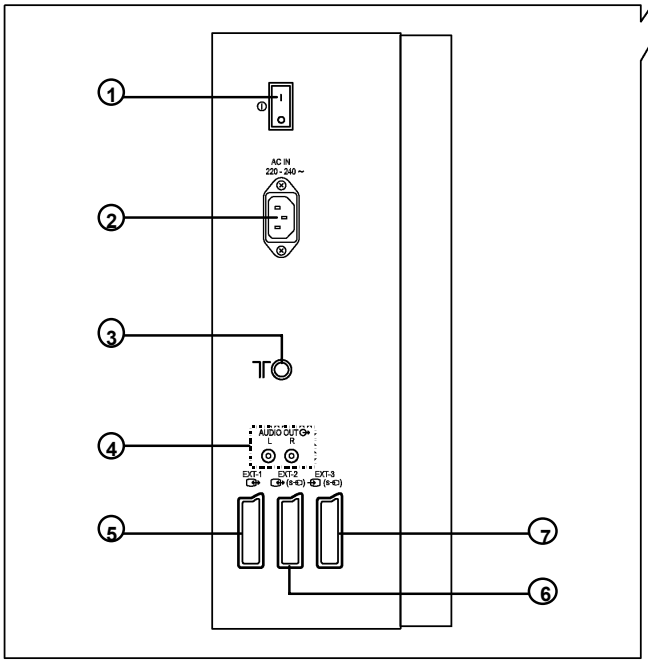




■FUNCTION NAME

① PC IN CONNECTOR (15pin D-sub connector)
② HEADPHONE JACK (MINI JACK)
③ EXIT-4 TERMINAL
④ VOLUME (◿) BUTTON Press this button to display the volume level indicator. Press the ⑤ up/down (∨/∧) buttons to change volume while the volume level indicator is displayed.
⑤ ∨/∧ (UP/DOWN) BUTTONS You can use this button as the ∨/∧ buttons of the PR channel. Pressing the ④ volume button makes this button function as the volume -/+ buttons.

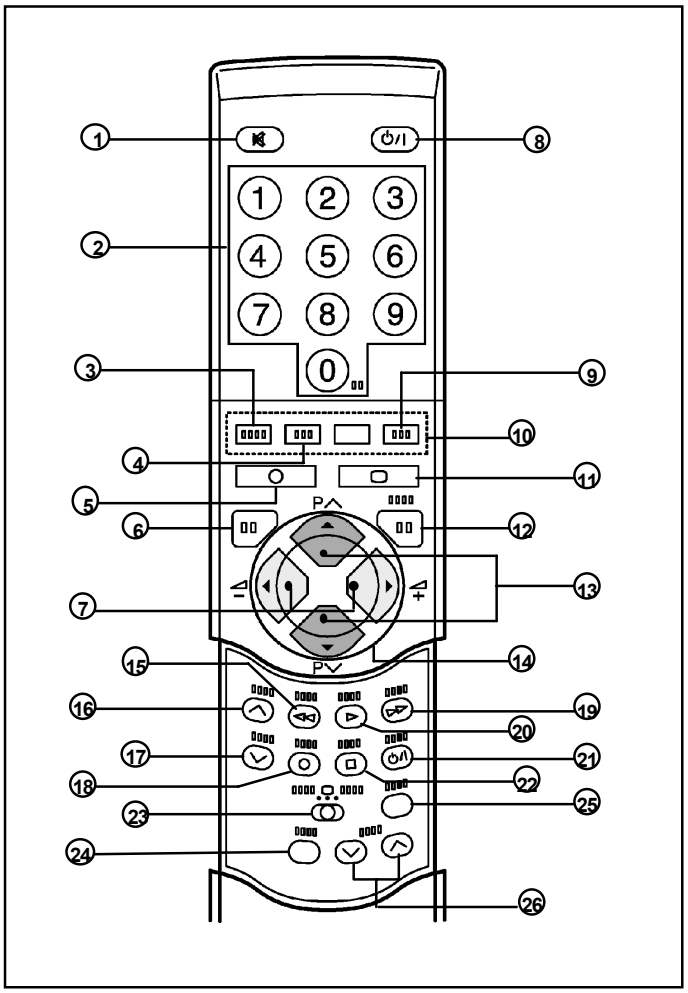
LEFT SIDE TERMINAL



■FUNCTION NAME

① MAIN POWER SW
② AC INLET
③ AERIAL SOCKET
④ AUDIO OUT (L, R) TERMINAL
⑤ EXT-1(IN/OUT) TERMINAL
⑥ EXT-2(IN/OUT) TERMINAL
⑦ EXT-3(IN) TERMINAL

REMOTE CONTROL UNIT



■ FUNCTION NAME

① MUTING Key ( )
② NUMBER (ten) Key
③ ZOOM Key
④ HYPER SOUND Key
⑤ INFORMATION Key ( )
⑥ TV Key
⑦ VOLUME -/+ Key
⑧ STAND-BY Key (POWER)
⑨ PIP Key
⑩ COLOUR Key
⑪ TEXT Key ( )
⑫ MENU / OK Key
⑬ PR CHANNEL UP/DOWN (∧/∨) Key
⑭ FUNCTION (◀/▶ & ▲/▼) Key
⑮ MODE Key (F. T/L) : LIST⇔FLOF/TOP
⑯ HOLD Key ( )
⑰ SUB PAGE Key ( )
⑱ STORE Key ( )
⑲ SIZE Key ( )
⑳ REVERSAL Key (?)
㉑ INDEX Key ( )
㉒ DISPLAY CANCEL Key ( )
㉓ TV / TEXT / DVD Key
㉔ CHANGE Key ( )
㉕ FREEZE Key
㉖ SUB-PAGE (∧/∨) Key

TECHNICAL INFORMATION

PDP (PLASMA DISPLAY PANEL) DESCRIPTION

■ CAUTION

Although a PDP is made with highly advanced precision, this does not necessarily mean all of the cells operate correctly. The PDP inevitably includes cell that do not light or light constantly.

If the specifications (PDP performance) are unclear at the time of shipment, an adequate description cannot be conveyed to the customer. In event of inquiries from customers regarding PDP performance, check the following specifications in order to offer a suitable reply.

■ CELL ARRANGEMENT

The PDP is constructed of front and rear glass substrates provided with respective discharge electrodes. Between these, neon for discharging and xenon for generating ultraviolet rays are enclosed.

One picture element (pixel) is composed of Red, Green and Blue (RGB) cells. The cell pitch is 0.36 mm horizontal (1.08 mm per pixel) by 1.08mm vertical.

As shown in Fig.1, the cells are arranged for each R／G／B colour. A pixel consists of each cell of R/G/B/ colour.

The size of a cell is 0.36mm horizontally and 1.08mm vertically.

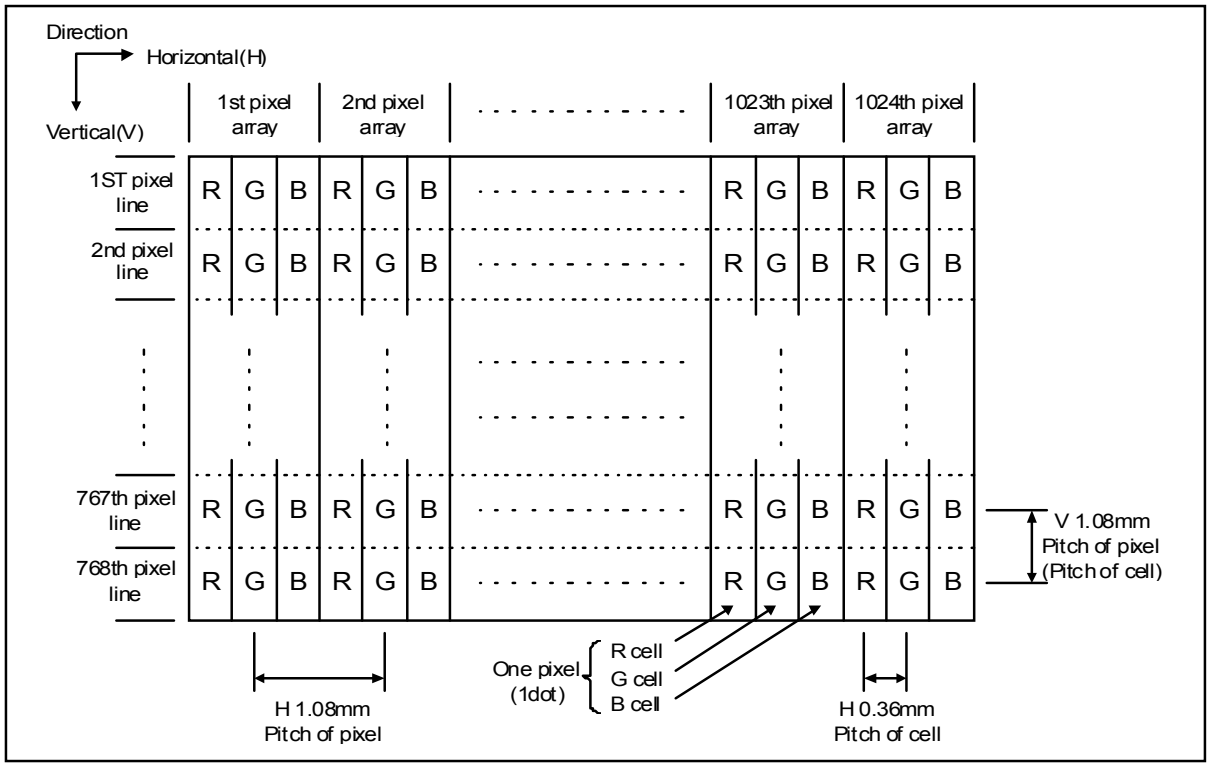


Fig. 1 PIXEL (CELL) ARRANGEMENT

■ PIXEL FAULT

There are two pixel faults - bright fault and dark fault - that are respectively defined as follows.

(1) BRIGHT FAULT

In this pixel fault, a cell that should not light originally is lighting or flashing on and off.

For checking this pixel fault, input ALL BLACK SCREEN and find out the cell that is lighting or flashing on and off.

(2) DARK FAULT

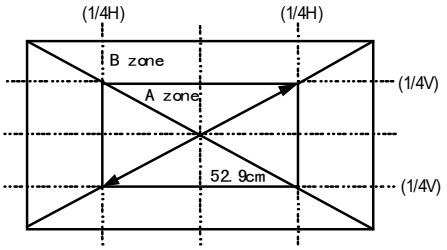
In this pixel fault, a cell that should light originally is not lighting or not flashing on and off or lighting with the brightness twice as brighter as originally lighting.

For checking this pixel fault, input 100% of each RGB colour and find out the cell that is not lighting or not flashing on and off or lighting with the brightness as brighter as originally lighting.

(3) PIXEL FAULT SPECIFICATION

	Screen display	Criteria for number of faulted cell	Criteria for number of consecutive faulted cell
Bright fault	All black screen	A zone: 2 or less than 2 in each colour B zone: 3 or less than 3 in each colour	2 or Less than 2 consecutively
Dark fault	Red level 100% on entire screen	A zone: 3 or less than 3 in each colour B zone: 8 or less than 8 in each colour	2 or Less than 2 consecutively
	Green level 100% on entire screen		
	Blue level 100% on entire screen		

(Note) A-zone : Center portion
(area enclosed by 1/4 vertically from the top and bottom and 1/4 horizontally from the right and left sides.)
B-zone : Other area



(Note) The consecutive pixel fault that are diagonally or intensively generated shall be interpreted as follows :

→ consecutive 3

→ consecutive 3

→ consecutive 4

INSTALLATIONS

1. SAFETY PRECAUTION FOR PDP OPERATION

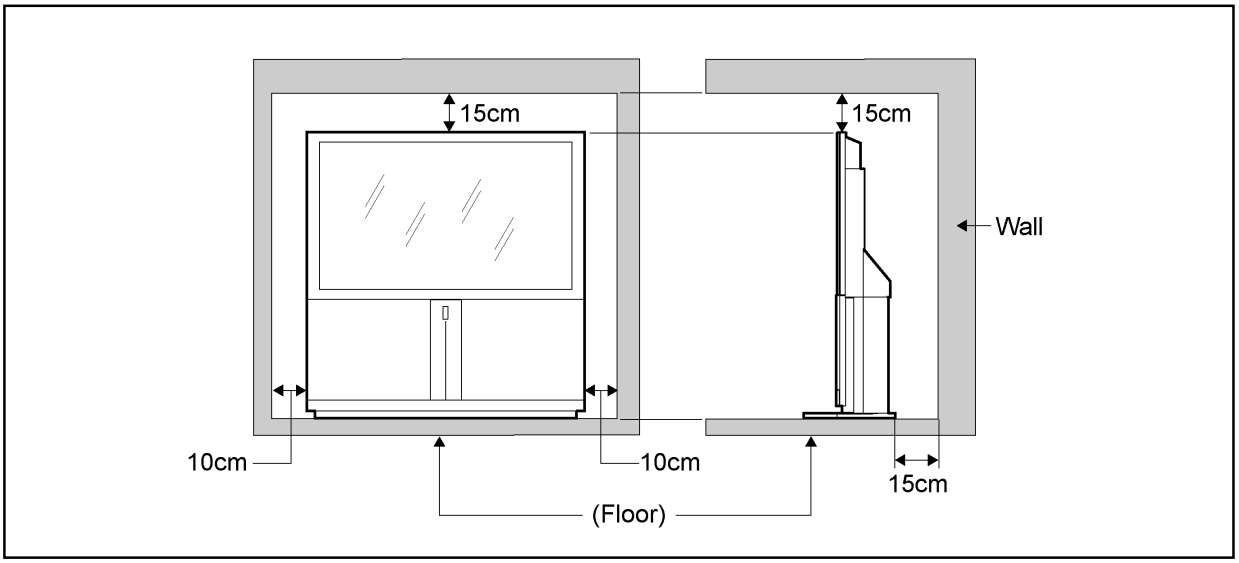
(1) Do not prevent the radiation of heat from back, top and flank sides of a PDP.
Preventing the radiation of heat from each side causes high temperature within a PDP and may damage the inner circuit.

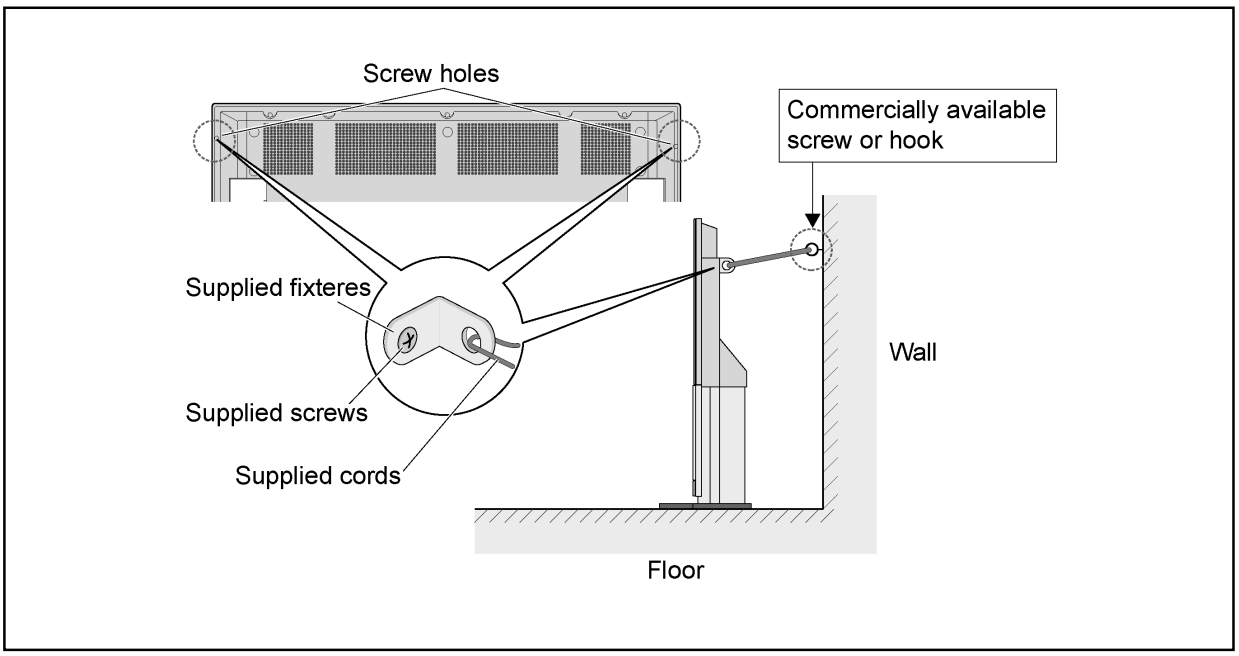
(2) Install a PDP in a place where is well ventilated.
Ambient temperature should be within a range of **0～40℃**.

(3) Install in not dusty place. If dust covers the air intake holes, inside ventilation effect will reduce. Then, it may damage the inner circuit.
If the unit uses in such atmosphere, it will strongly require regular cleaning or maintenance.

2. REQUIREMENTS FOR SETTING

The following minimum space must be kept when a PDP is installed.





SPECIFIC SERVICE INSTRUCTIONS

PRECAUTIONS FOR PDP USE

1. PRECAUTION DURING TRANSPORTATION

When this unit is delivered, the PDP body inside of the box will be subject to constant of gravitation under the rough handling (throwing, dropping, etc.) even though a rigid box is used.

In such a case, the PDP may be damaged during transportation. In order to avoid an accident during transportation, care must be taken to select a reliable carrier. Once a reliable carrier is selected, advise them how to handle a PDP properly during transportation.

In addition, a PDP should be insured for its physical damage before shipment.

This product is fragile because glass is widely used. Thus the following requirements for transportation should be observed.

(1) **Don't apply vibration and impact.**

The glass of a PDP may be broken when the package is brought down on its side. When carrying the package, it must always be handled with two persons with due care not to apply vibration and impact on the package.

(2) **Don't lay a PDP on its side.**

A PDP should always be placed upright during both transportation and safekeeping. Don't lay it on its side. The panel of a PDP is very fragile to the impact in the horizontal direction.

When a car carries a PDP, load it on board the car in parallel with the moving direction of the car. Don't lay several PDPs one on top another.

During safekeeping, don't lay more than two PDPs one on top another even if they are kept upright.

2. RETANED-IMAGE AND BURNING

(1) When the same pattern is displayed continuously for many hours, the burning of the screen is occurred in the same manner as for a CRT. This will shorten the service life of a PDP. In order to avoid the burning of the screen, turn the display off when not necessary. Also take such other measures as scrolling the screen and using a screen saver. In addition, periodically display the brightness reversal, the reversal to the complementary colour or the insertion of animated image - all these will make the display on the screen uniform. Since the higher brightness may cause the burning, users are requested to use neutral colours as much as possible. Animated image will not cause the burning.

(2) When the screen is switched after continuous display, the retained-image may be significant because the brightness of a certain portion becomes higher than that of other portions. This is caused by a phenomenon in which a surface electrical discharge of the lighted portion is more activated than the non-lighted portions, resulting in higher brightness.

(3) This unit has functions such as “PIXEL SHIFT”, “COLOUR-REVERSE” and “REFRESH”. They will reduce burning. Please refer to the instruction book for detail.

3. INFRARED RAYS

Because the near infrared rays (800～1000mm) radiate from the panel face, the neighboring infrared ray remote controllers, infrared communication systems, etc. may malfunction. In these cases, take a measure to prevent the trouble to be caused by direct rays (or reflected rays) from the screen by changing the direction of the screen face or keeping a safe distance between a PDP and other devices.

4. OPTICAL FILTER (FRONT FILTER)

(1) Don't expose the optical filter directly to the sun for a long period of time.

Exposing directly to the sun for a long period of time may change the special property of the optical filter, resulting in a change of colour.

(2) Don't wipe the optical filter with solvents such as benzene, thinner, etc.

Wiping the optical filter with solvents such as benzene, thinner, etc. may cause change in quality and peel off the coasting on the surface.

Lightly wipe the optical filter with a soft cloth with less fluffy (e.g. pure flannel).

(3) Because the surface of the optical filter is fragile, don't scrub or hit it with a hard material.

5. PRECAUTION DURING CHANGING OF MONITOR UNIT ARMOR PARTS

Extreme care must be exercised for a PDP when the armor parts are changed.

(1) Special attention should be paid not to apply pressure on the MONITOR UNIT glass surface during the work.

(2) Don't touch the panel surface in any way.

(3) When changing the MONITOR UNIT armor parts (rear cover, front panel and optical filter), place the panel (PDP side) upside down in principle. At this time, a suitable mat must be used so as to prevent the front side from damaging. However, excessively soft material (e.g. blanket) should not be used for this purpose in any way. If a blanket is used, the surface of a PDP is pressurized by the blanket when placing the panel upside down.

Under such a condition, the PDP may be broken during the work.

6. OTHER PRECAUTIONS

(1) **Brightness change in the screen**

In order to save the power consumption, the power is controlled (with APS function) depending on the brightness of the screen. For this, the brightness may change after a short time when the picture of the screen is changed. However, this phenomenon is not a trouble.

(2) **Component input setting**

The component signals 1080i and 1035i are the same frequencies. So, the unit does not detect the signals automatically.

In this case, set required signal by “HD SIGNAL MODE” in the setup menu.

DISASSEMBLY PROCEDURE

SEPARATION

SEPARATING THE PDP MONITOR UNIT AND LOWER BLOCK

[1] REMOVING THE BACK COVER

1. Remove the **5** screws marked **A** as shown in Fig.2.
2. Remove the **2** screws marked **B** as shown in Fig.2.
3. Remove the **3** screws marked **C** as shown in Fig.2.
4. Remove the back cover toward you.

[2] REMOVING THE SIDE COVER

5. Remove the **3** screws marked **D** as shown in Fig.2.
6. Remove the **2** screws marked **E** as shown in Fig.2.

[3] REMOVING THE BACK STAY

7. Remove the side cover.
8. Remove the **2** screws marked **F** as shown in Fig.2.

[4] SEPARATING THE MONITOR UNIT LOWER BLOCK

9. Remove the **2** screws marked **G** as shown in Fig.2.
10. Separate the MONITOR UNIT and LOWER BLOCK as shown in Fig.2.

*** This separation should be performed by 2 or more persons.**

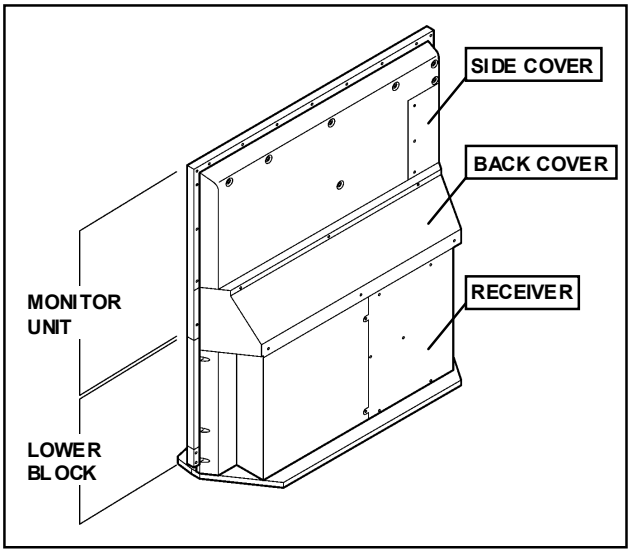


Fig. 1

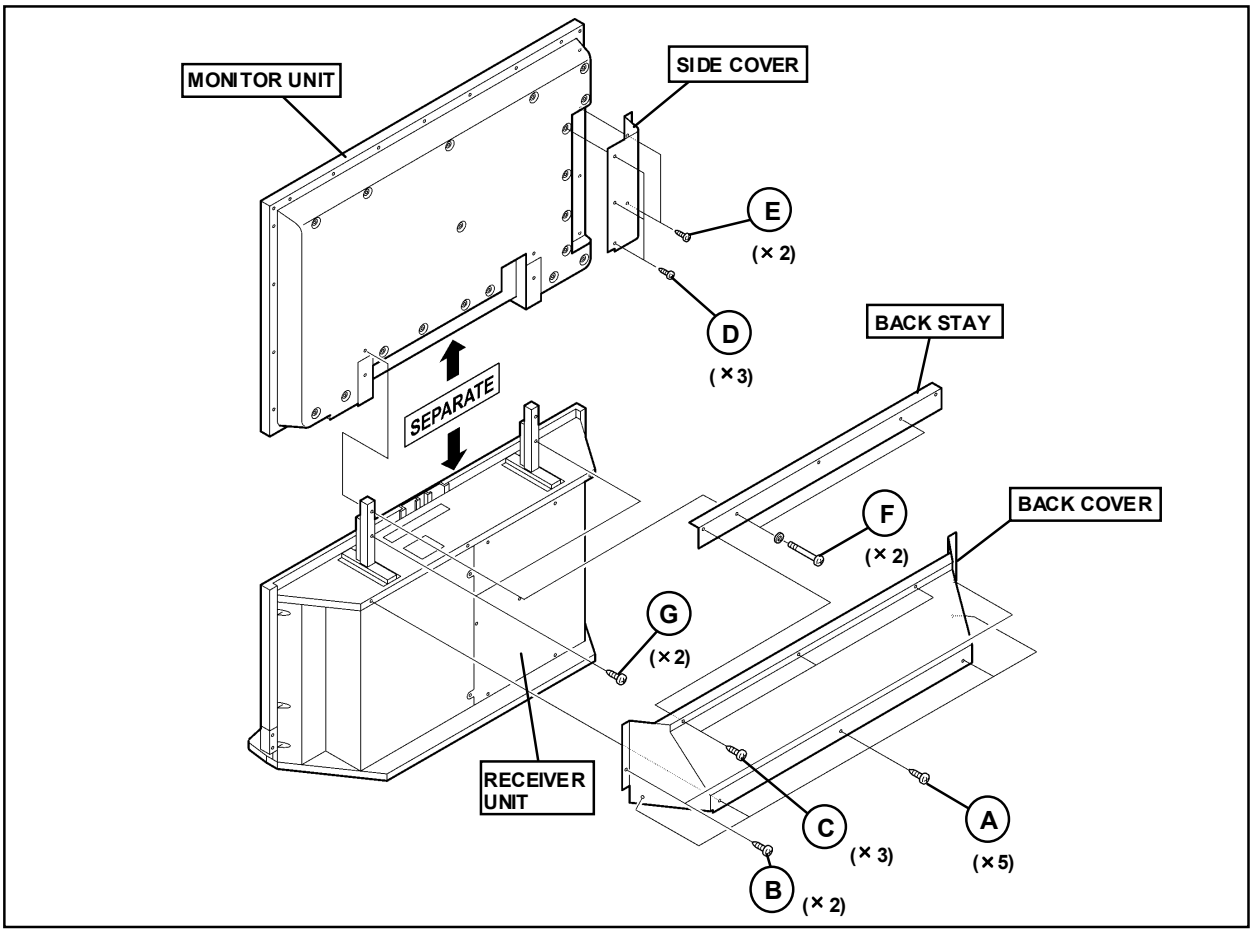


Fig. 2

LOWER BLOCK

REMOVING THE LOWER BLOCK

[NOTE]

The periphery of the receiver unit is a wooden cabinet. When the receiver unit is removed, hold it up slightly with both hands and put a mat or the like (cardboard, etc.) under the receiver unit so as to prevent scratching the cabinet during the removal work. Then remove the receiver unit by withdrawing it toward you.

[1] REMOVING THE RECEIVER UNIT

1. Remove the **4** screws marked **A** as shown in Fig.3.
2. Slightly raise the both sides of the receiver unit by hand and remove the receiver unit toward you.

* Thus the connector should be securely inserted when the receiver unit is installed again.

3. Unplug the connectors from the receiver unit.
4. Withdraw the receiver unit backward.

[2] REMOVING THE CASE COVER OF THE RECEIVER UNIT

- Take out the RECEIVER UNIT.

1. Remove the **10** screws marked **A** as shown in Fig.4.
2. Withdraw the case cover toward you from chassis case.

[3] REMOVING THE AV PLATE AND CHASSIS BEAM

- Take out the RECEIVER UNIT.
- Take out the CASE COVER.

1. Remove the **6** screws marked **B** as shown in Fig.4.
2. Unplug the connectors from the AV PLATE
3. Withdraw the AV PLATE toward you.
4. Remove the **2** screws marked **C** as shown in Fig.4.
5. Withdraw the chassis beam toward you from chassis case.

[4] REMOVING THE UNDER PANEL (L&R)

- Take out the RECEIVER UNIT.

1. Remove the **2** screws marked **D** (L&R) as shown in Fig.5.
2. Remove the **4** screws marked **H** (L&R) as shown in Fig.5.
3. As shown Fig.5, remove the under panel (L&R) in the arrow direction marked **I**.

[5] REMOVING THE FRONT CONTROL PWB

- Take out the RECEIVER UNIT.

4. Remove the **3(2+1)** screws marked **A** as shown in Fig.5.
5. Remove the **6** screws marked **B** on the FRONT CONTROL PWB as shown in Fig.5.

* If necessary, take off the wire clamp, connectors, etc.

[6] REMOVING THE SPEAKER NET / CENTER PANEL / FRONT SW PWB / SW LEVER

1. Remove the **4** screws marked **C** (L&R side) as shown in Fig.5.
2. Then withdraw the SPEAKER NET toward you.
3. Remove the **4** screws marked **E** as shown in Fig.5.
4. Then remove the CENTER PANEL / FRONT SW PWB & SW LEVER as shown in Fig.5.

[7] REMOVING THE SPEAKER

- Take out the SPEAKER NET.

1. Remove the **4** screws marked **F** as shown in Fig.5.
2. Follow the same steps when removing the other hand speaker.
3. Remove the **4** screws marked **G** as shown in Fig.5.

CHECKING THE PW BOARD

1. To check the back side of the PW BOARD.
   1) Pull out the chassis.
   2) Erect the chassis vertically so that you can easily check the back side of the PW BOARD.

[CAUTION]

- When erecting the PW BOARD, be careful so that there will be no contacting with other PW BOARD.
- Before turning ON power, make sure that the wire connector is properly connected.0
- When conducting a check with power supplied, be sure to confirm that the EARTH WIRE is connected to the PW BOARD and others PW BOARD.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together.
   Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

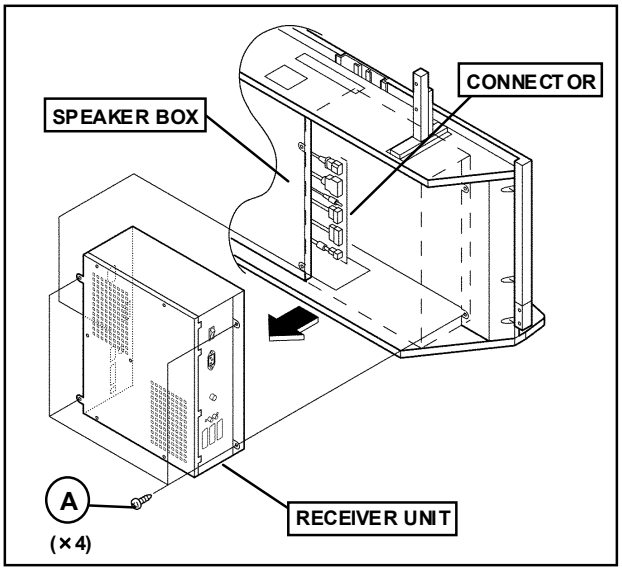


Fig.3

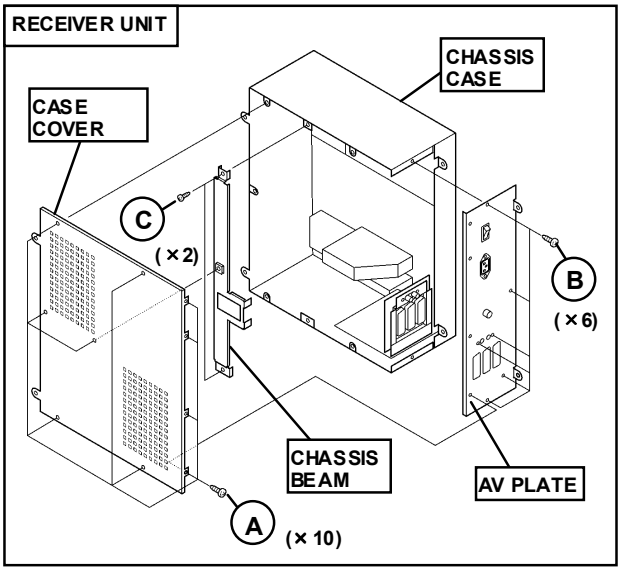


Fig.4

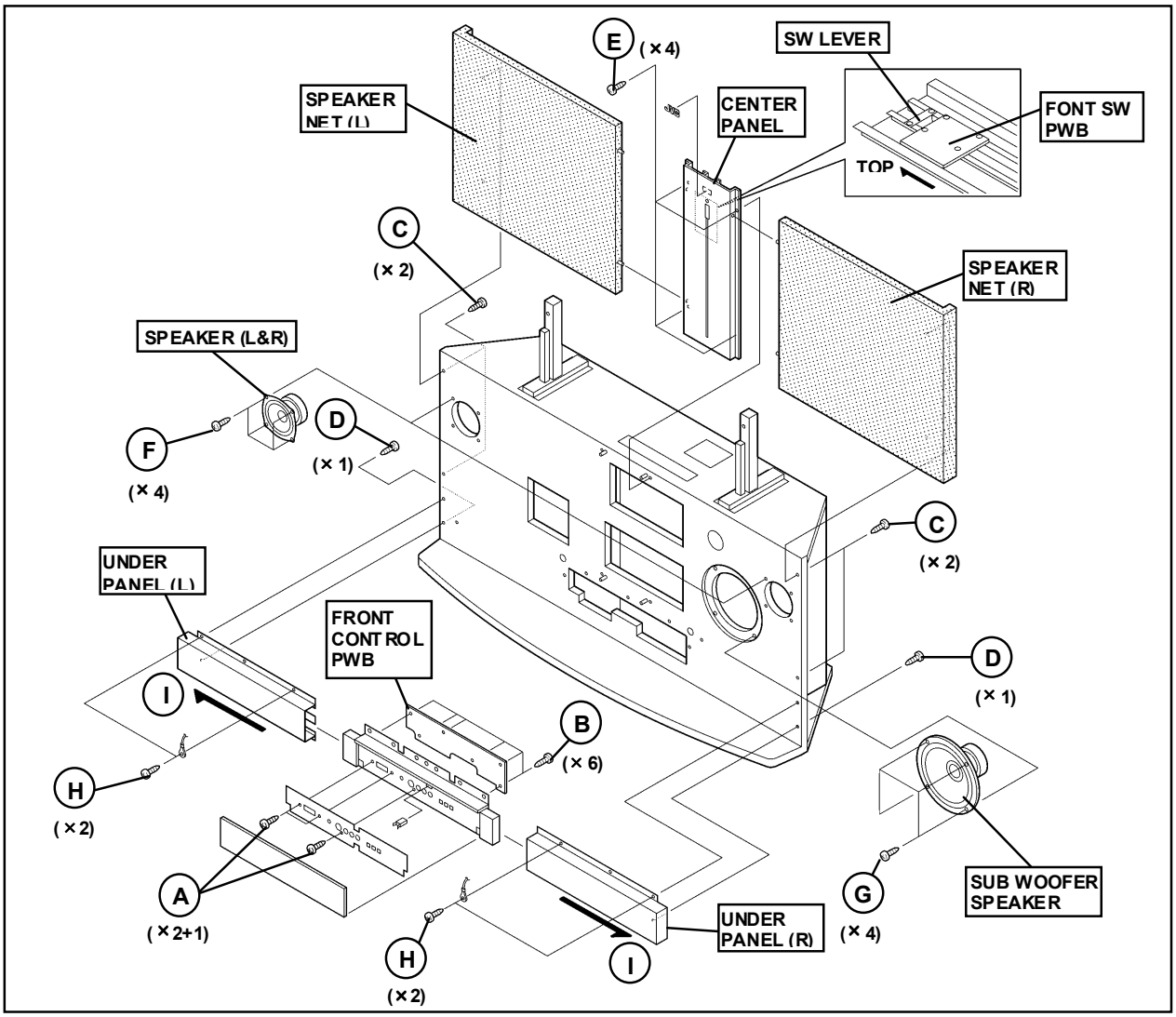


Fig.5

MONITOR UNIT

REMOVING THE MONITOR UNIT

[1] REMOVING THE REAR COVER / SIDE COVER

* Take out the MONITOR UNIT.
* Take out the RECEIVER UNIT.

1. Remove the **18** screws marked **A** as shown in Fig.1.
2. Remove the **17** screws marked **B** as shown in Fig.1.
3. Remove the **2** screws marked **C** as shown in Fig.1.
4. Remove the **3** screws marked **D** as shown in Fig.1.
5. Withdraw the REAR & SIDE COVER toward you.

* If necessary, take off the wire clamp, connectors, plug. etc.

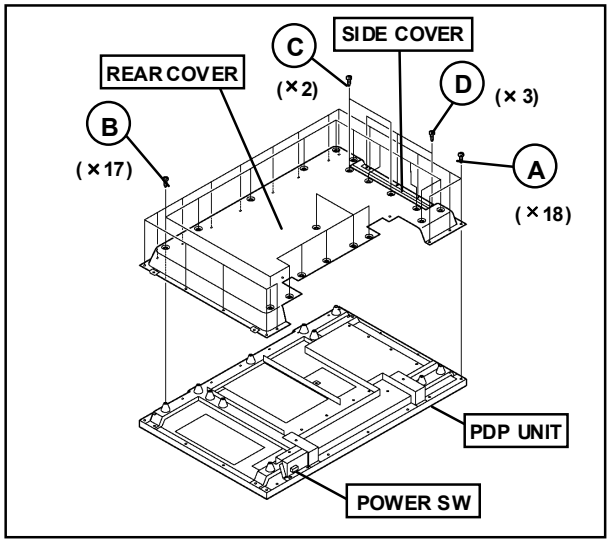


Fig.1

[2] REMOVING THE SW PWB COVER

- Take out the REAR COVER / SIDE COVER.

1. Remove the **2** screws marked **A** as shown in Fig.2.
2. Remove the **2** screws marked **B** as shown in Fig.2.
3. Withdraw the SW PWB COVER toward you.

[3] REMOVING THE SPEAKER / TERMINAL COVER

- Take out the REAR COVER / SIDE COVER.
- Take out the SW PWB COVER.

1. Remove the **6** screws marked **C** as shown in Fig.2.
2. Remove the **4** screws marked **D** as shown in Fig.2.
3. Withdraw the SPEAKER and TERMINAL COVER toward you.

[4] REMOVING THE INPUT TERMINAL COVER

- Take out the REAR COVER / SIDE COVER.

1. Remove the **5** screws marked **E** as shown in Fig.2.
2. Remove the **2** screws marked **F** as shown in Fig.2.
3. Pull out the INPUT TERMINAL COVER backward.

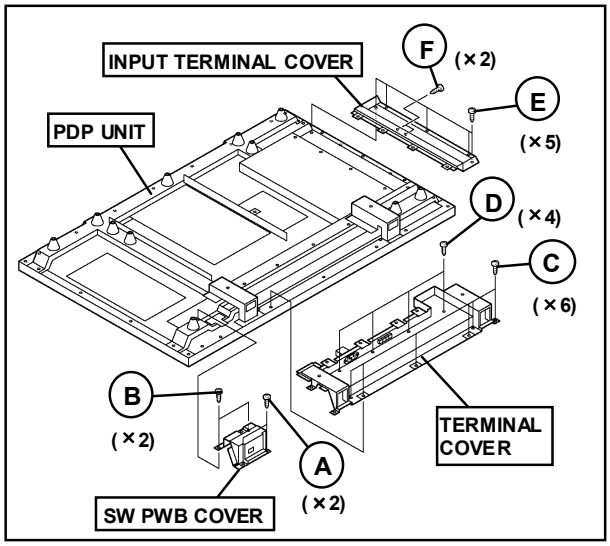


Fig.2

[5] REMOVING THE PDP UNIT

- Take out the REAR COVER / SIDE COVER.
- Take out the SW PWB COVER.
- Take out the TERMINAL COVER.
- Take out the INPUT TERMINAL COVER.

1. Remove the **6** screws marked **A** as shown in Fig.3.
2. Take out the MONITOR UNIT from the FRONT PANEL ASS'Y(with OPTICAL FILTER).

* The remove of PDP UNIT should be performed by 2 or more persons.

CAUTION : Do not damage the gas inlet !

If the gas inlet is damaged, the PDP UNIT must be replaced. So extreme care should be taken not to damage the gas inlet when you remove the PDP UNIT.

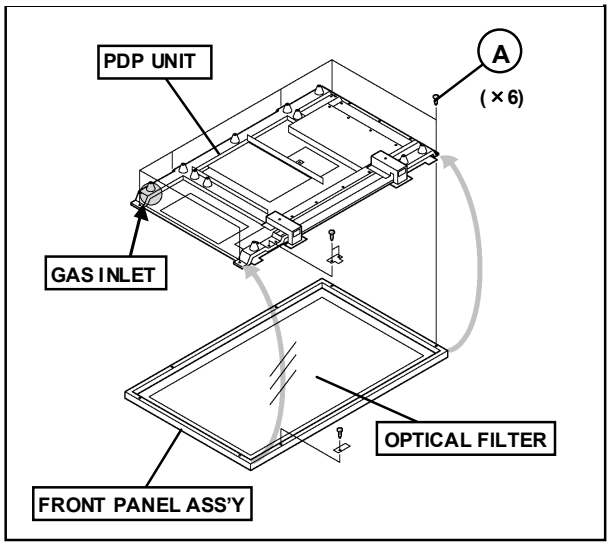


Fig.3

REPLACEMENT OF MEMORY ICs

1. MEMORY ICs

This TV uses memory IC. In the memory IC, there are memorized data for correctly operating the video and deflection circuits.
When replacing the memory IC, be sure to use an IC written with the initial values of data.

2. PROCEDURES FOR REPLACING MEMORY ICs

PROCEDURE
(1) **Power off** Switch the power off and disconnect the power plug.
(2) **Replace ICs**. Be sure to use a memory IC written with the initial setting data.
(3) **Power on** Connect the power plug and switch the power on.
(4) **Check and set SYSTEM CONSTANT SET** ● **The adjustment should not be done without signal.** 1) Press the **INFORMATION** key and the **MUTING** key of the REMOTE CONTROL UNIT simultaneously. 2) The SERVICE MENU screen of Fig. 1 will be displayed. 3) While the SERVICE MENU is displayed, press the **INFORMATION** key and **MUTING** key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed. 4) Check the setting values of the SYSTEM CONSTANT SET of Table 1. If value is different, select the setting item with the **FUNCTION ▲/▼** key, and set the correct value with the **FUNCTION ◀/▶** key. 5) Press the **MENU(OK)** key to memorize the setting value. 6) Press the **INFORMATION** key, and return to the normal screen.
(5) **Setting of receive channels** Set the receive channel. For setting, refer to the OPERATING INSTRUCTIONS.
(6) **Setting of SERVICE MENU** Verify the setting items of the **SERVICE MENU** of Table 2, and reset where necessary. For setting, refer to the SERVICE ADJUSTMENTS.
(7) **User settings** Check the user setting values of Table 3, and if setting value is different, set the correct value. For setting, refer to the OPERATING INSTRUCTIONS.

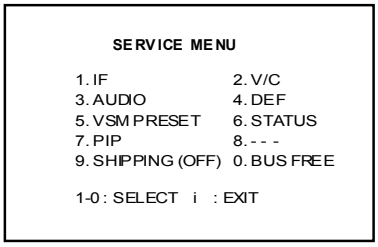


Fig.1

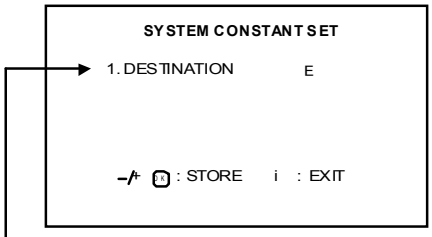
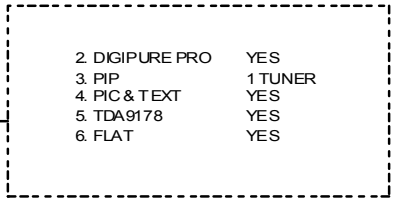
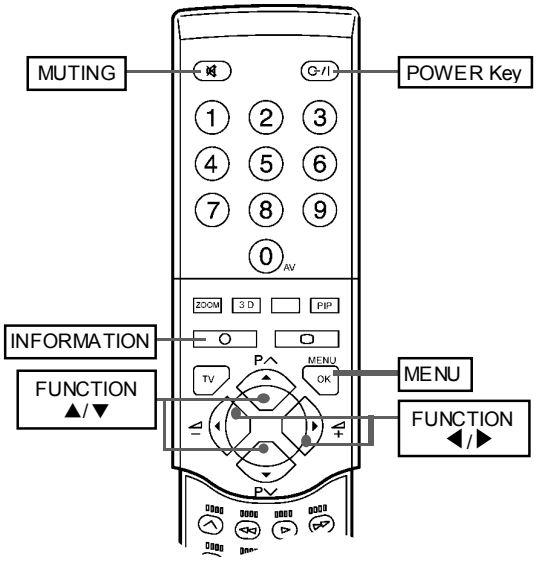


Fig.2



REMOTE CONTROL UNIT KEY ASSIGNMENT



SETTING VALUE OF SYSTEM CONSTANT SET (TABLE 1)

Setting item	Setting content	Setting value
1. DESTINATION	EK → EU → EI	E
2. Digi Pure	YES → NO	YES
3. PIP	1 TUNER → 2 TUNER → NO	1 TUNER
4. PIC & TEXT	YES → NO	YES
5. TDA9178	YES → NO	YES
6. FLAT	YES → NO	YES

SERVICE MENU SETTING ITEMS (TABLE 2)

Setting item	Setting value	Setting item	Setting value
1. IF	1. VCO 2. ATT [Do not adjust]	4. DEF	1. V-SHIFT 2. V-SIZE 3. H-CENT 4. H-SIZE
2. V / C	1. R. GAIN 2. G. GAIN 3. B. GAIN 4. BRIGHT 5. CONTRAST 6. COLOUR 7. HUE 8. SHARP [Don't move] 9. VCO ADJUSTMENT 10. VIDEO AGC [Don't move] 11. SYNC SLICE [Don't move] 12. A MOVIE [Don't move]	5. VSM PRESET COOL NORMAL WARM	1. CONT. 2. BRIGHT 3. SHARP 4. COLOUR 5. HUE 6. R. GAIN 7. G. GAIN 8. B. GAIN
3. AUDIO **[Do not adjust]**	1. ERR LIMIT 2. A2 ID THR	7. PIP **[Do not adjust]**	1. PIP VCO ADJ 2. PIP VID AGC 3. PIP SNC SLI

USER SETTING VALUE (TABLE 3)

Setting item	Setting value	Setting item	Setting value
SUB POWER	ON	VOLUME	Appropriate sound volume
SHIPPING CHANNEL	PR1	DISPLAY	INDICATED
PRESET CHANNEL	See OPERATING INSTRUCTIONS.	ZOOM MODE	PANORAMIC
PICTURE SETTING		**EXT SETTING**	
TINT (COLOUR TEMP.)	NORMAL	ID S-IN DUBBING	BLANK BLANK EXT-1→EXT-2
PICTURE FEATURES		**FEATURES**	
DIGITAL VNR Digi Pure COLOUR SYSTEM 4:3 AUTO ASPECT PIP POSITION	AUTO AUTO TV : According to preset CH EXT : AUTO PANORAMIC RIGHT BELOW	SLEEP TIMER BLUE BLACK CHILD LOCK DECODER (EXT-2)	OFF ON ID : No.0000, ALL CH : OFF * Press the "0" key in CHILD LOCK menu to find to ID No.****. ALL CH : OFF
SOUND SETTING		**INSTALL**	
TONE BALANCE TV SPEAKER 3D SURROUND	CENTER CENTER L / R OFF	LANGUAGE EDIT	ENGLISH PR CHANNEL ONLY OTHERS : BLANK

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

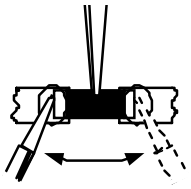
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

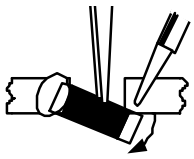
1. How to remove Chip parts

◆ **Resistors, capacitors, etc**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

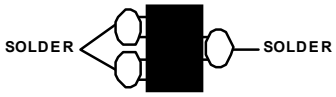


(2) Shift with tweezers and remove the chip part.

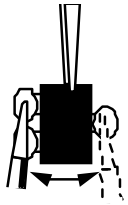


◆ **Transistors, diodes, variable resistors, etc**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

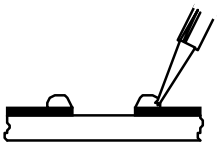


Note : After removing the part, remove remaining solder from the pattern.

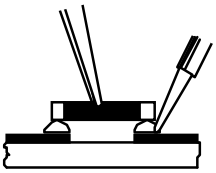
2. How to install Chip parts

◆ **Resistors, capacitors, etc**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

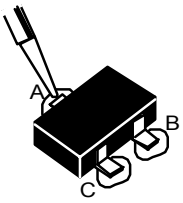


◆ **Transistors, diodes, variable resistors, etc**

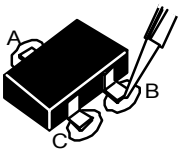
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



SERVICE ADJUSTMENTS

BEFORE STARTING SERVICE ADJUSTMENT

1. **There are 2 ways of adjusting this TV: One is with the REMOTE CONTROL UNIT and the other is the conventional method using adjustment parts and components.**
2. **The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values. The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**
3. Make sure that connection is correctly made to AC power source.
4. Turn on the power of the TV and measuring instrument for warming up for at least 30 minutes before starting adjustment.
5. If the receive or input signal is not specified, use the most appropriate signal for adjustment.
6. Never touch parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.
7. Preparation for adjustment (presetting)
   Unless otherwise specified in the adjustment items, preset the following functions with the REMOTE CONTROL UNIT

● **USER MENU SETTING**

Setting Item	Setting Position
ZOOM	PANORAMIC
PICTURE MODE (VSM)	NORMAL
TINT / CONTRAST / BRIGHT / SHARP / COLOUR	CENTER
SLEEP TIMER	OFF
TREBLE / BASS / BALANCE	CENTER
ECO	OFF

MEASURING INSTRUMENT AND FIXTURES

1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator (Digital & Analog))
   [PAL / SECAM / NTSC]
4. Remote control unit

ADJUSTMENT ITEMS

< MONITOR >

■ **Checking item**

- Adjustment of POWER VOLTAGE

< RECEIVER >

- Checking of AFT CW VCO

■ **VSM presetting**

- Setting of VSM PRESET

■ **V/C circuit adjustment**

- Adjustment of WHITE BALANCE (High Light)
- Adjustment of SUB BRIGHT
- Adjustment of CONTRAST
- Adjustment of SUB COLOUR Ⅰ
- Adjustment of SUB COLOUR Ⅱ
- Adjustment of SUB HUE Ⅰ
- Adjustment of SUB HUE Ⅱ
- Checking of MAIN COLOUR DECODER VCO
- Checking of SUB COLOUR DECODER VCO

■ **DEFLECTION circuit adjustment**

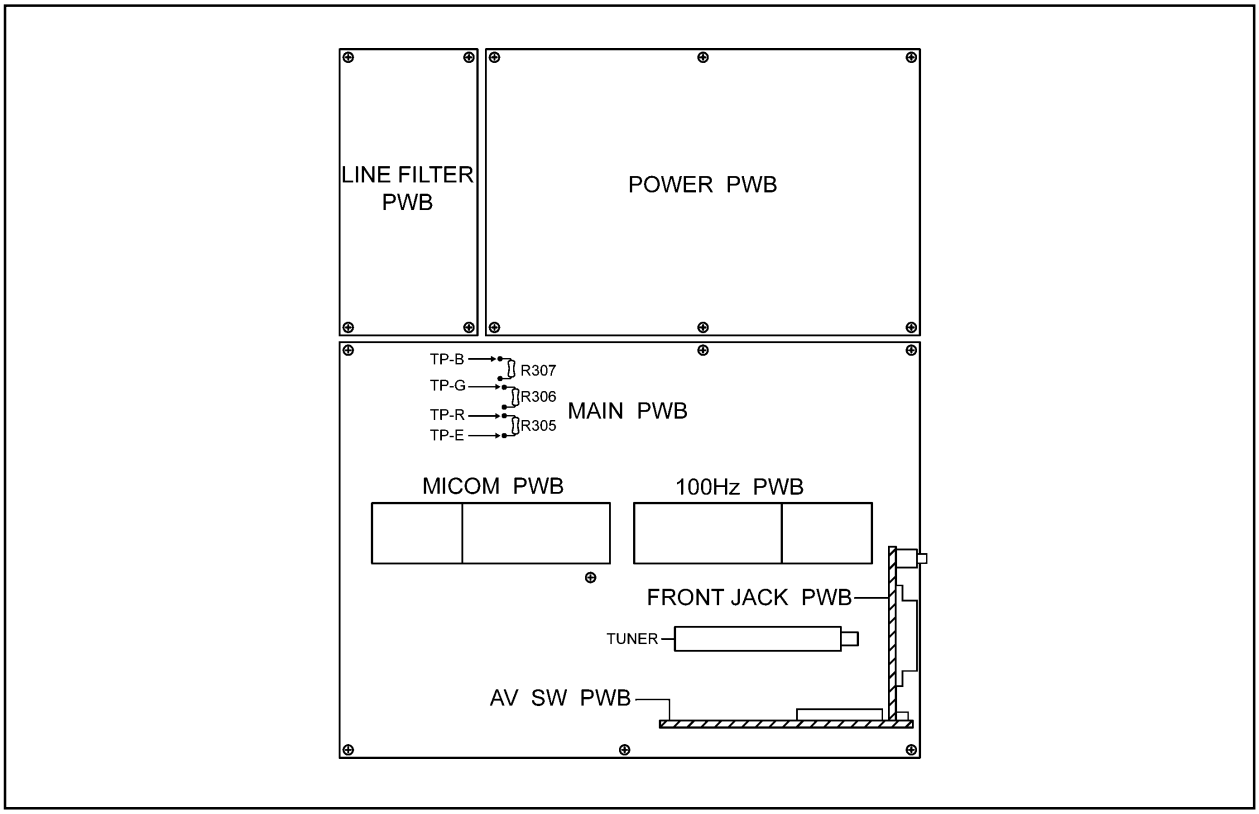
- Adjustment of V. POSITION
- Adjustment of V. SIZE
- Adjustment of H. POSITION
- Adjustment of H. SIZE

NOTE

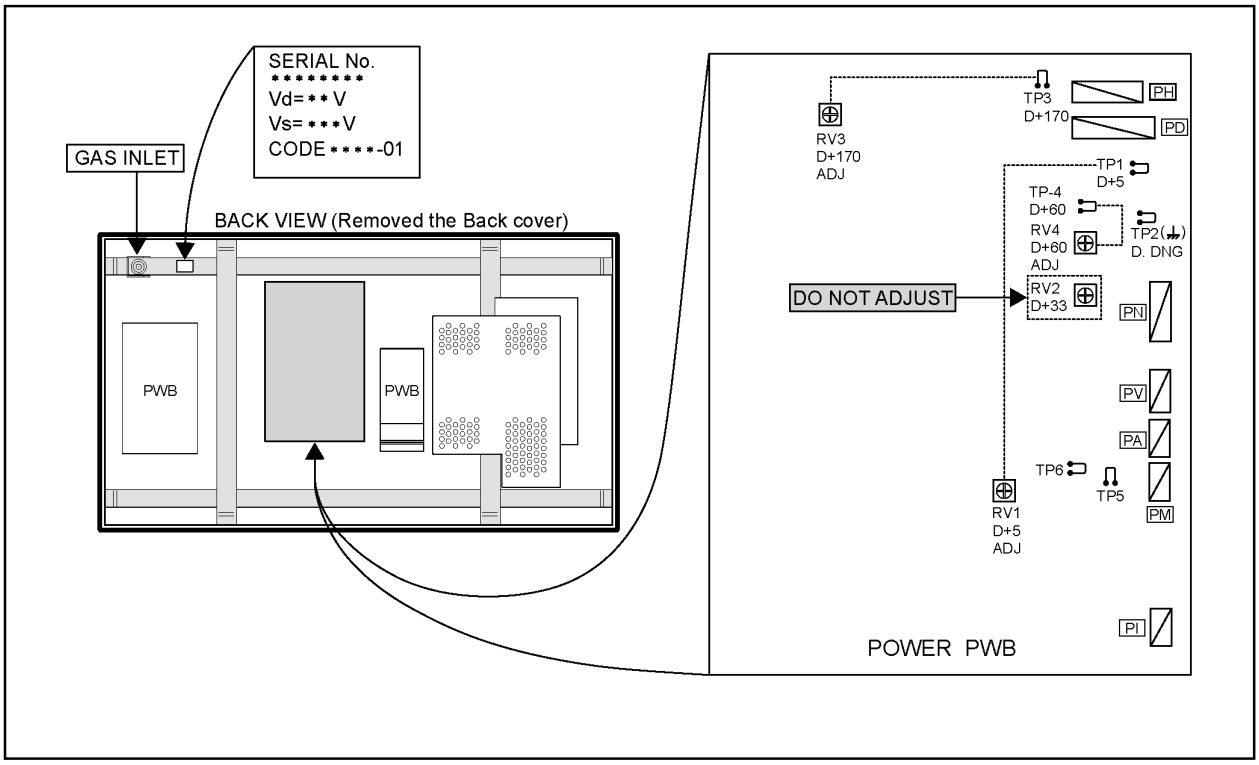
This model (AV42PD20ES) consists of a MONITOR and a RECEIVER. However, the MONITOR and RECEIVER cannot be activated separately. Trying the separate activation of the MONITOR or RECEIVER may cause a trouble. Always try to activate the MONITOR and RECEIVER as a unit during a service repair.

ADJUSTMENT PART LOCATIONS

■ RECEIVER



■ MONITOR (PDP)



BASIC OPERATION SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

With the SERVICE MENU, various settings (adjustments) can be made, and they are broadly classified in the following items of settings (adjustments):

(1) **1. IF** ····· This mode adjusts the setting values of the IF circuit.
(2) **2.V/C** ····· This mode adjusts the setting values of the VIDEO / CHROMA circuit.
(3) **3.AUDIO** ····· This mode adjusts the setting values of the multiplicity SOUND circuit.
(4) **4.DEF** ····· This mode adjusts the setting values of the DEFLECTION circuit.
(5) **5.VSM PRESET** ····· This mode adjusts the initial setting values of COOL, NORMAL and WARM.
(VSM : Video Status Memory)

3. BASIC OPERATION OF SERVICE MENU

(1) **How to enter SERVICE MENU**

Press the **INFORMATION** key and the **MUTING** key of the REMOTE CONTROL UNIT (Fig. 2) simultaneously, and the SERVICE MENU screen of Fig. 1 will be displayed.

SERVICE MENU

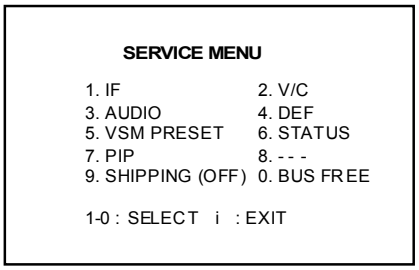


Fig.1

(2) **Selection of SUB MENU SCREEN**

Press one of keys 1～5 (Fig. 2) of the REMOTE CONTROL UNIT and select the SUB MENU SCREEN (See Fig. 3), form the SERVICE MENU.

SERVICE MENU → SUB MENU

1. IF
2. V / C
3. AUDIO — **Not to adjust**
4. DEF
5. VSM PRESET
6. STATUS
7. PIP
8. - - - — **Not to adjust**
9. SHIPPING (OFF)
0. BUSS FREE

REMOTE CONTROL UNIT KEY ASSIGNMENT

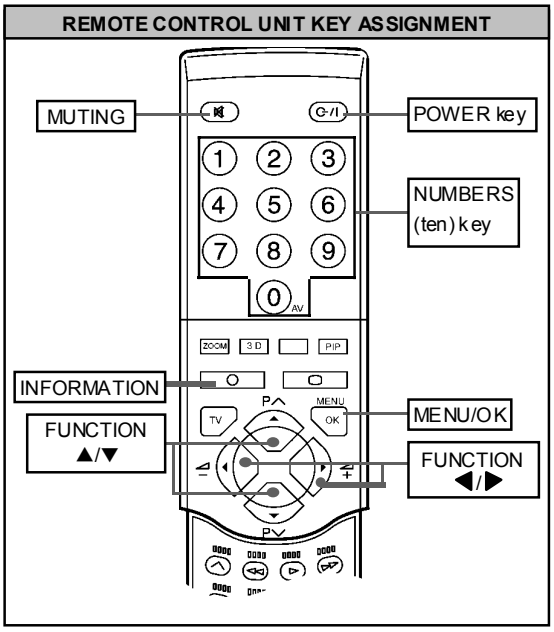


Fig.2

SERVICE MENU FLOW CHART

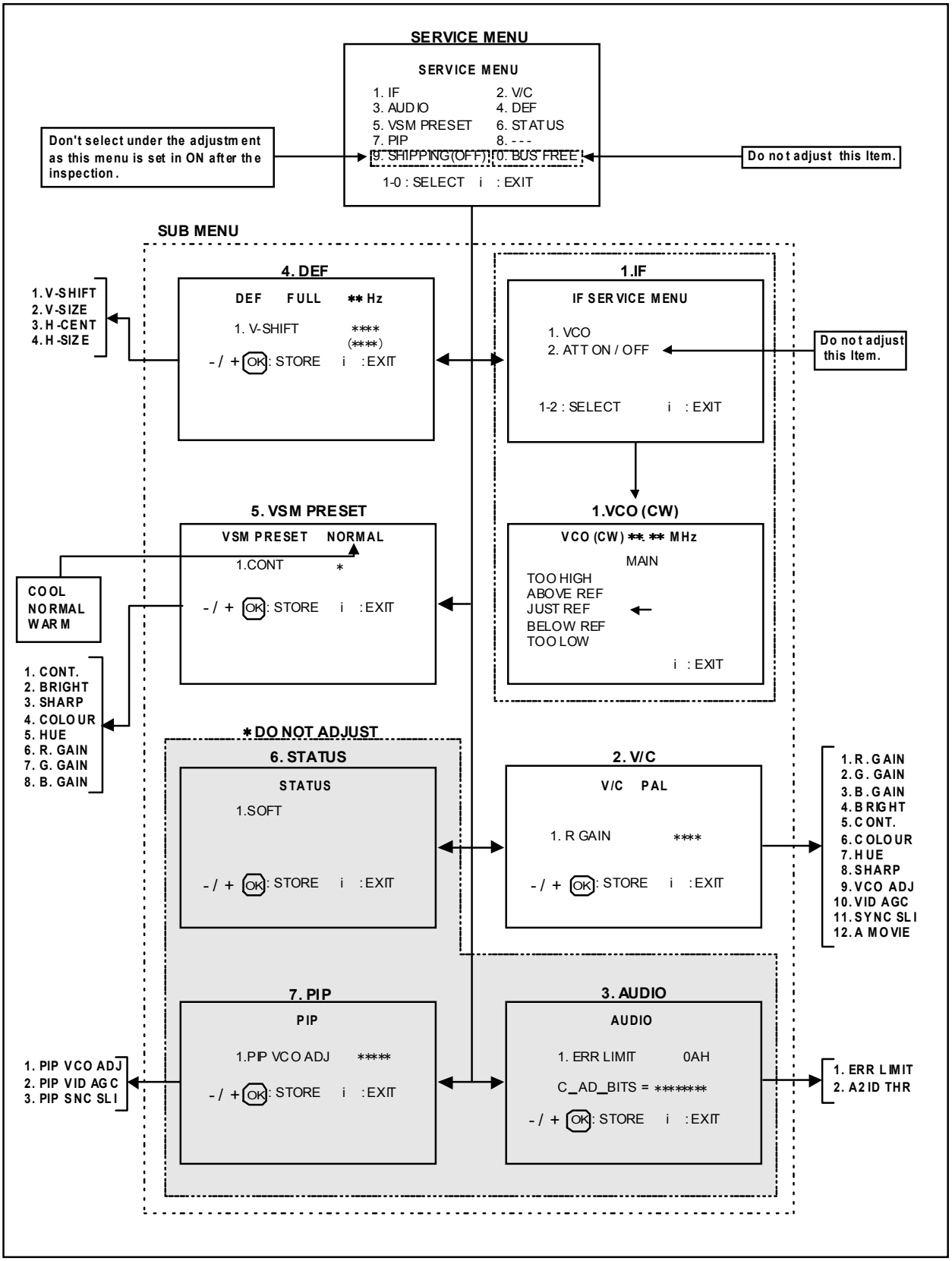


Fig.3

(3) **Setting methods**

● Method of Setting **1.IF** as [VCO]
(The adjustment should not be done without signal.)

① 1 Key ····· Select 1.IF.
② 1 Key ····· Select 1. VCO (CW)
Check the arrow position between the "ABOVE REF. and BELOW REF.
③ INFORMATION Key ····· Return to the SERVICE MENU screen.

● Method of setting **2.V/C, 4.DEF** and **5.VSM PRESET.**

① 2～5 Key ····· Select one from **2. V/C, 4. DEF** and **5. VSM PRESET**.
② FUNCTION UP/DOWN Key ····· Select setting items.
③ FUNCTION LEFT/RIGHT Key···· Set (adjust) the setting values of the setting items.
④ MENU (OK) Key ····· Memorize the setting value.
(Before storing the setting values in memory, do not press the CH, TV, POWER ON / OFF key - if you do, the values will not be stored in memory.)
⑤ INFORMATION Key ····· Return to the **SERVICE MENU** screen.

● Do not adjust **3.AUDIO, 6. STATUS, 7. PIP, 8. –- , 9. SHIPPING (OFF)** and **0. BUS FREE** function**.**

(4) **Release of SERVICE MENU**

1) After completing the adjustment, return to the SERVICE MENU, then again press the INFORMATION key to return to the normal screen.

INITIAL SETTING VALUE OF SERVICE MENU

1. **Adjustment of the SERVICE MENU is made on the basis of the initial setting values ; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.**
2. **Do not change the initial setting values of the setting (Adjustment) items not listed in "ADJUSTMENT".**

1.IF

SETTING ITEM	Initial setting value
1.VCO	Proper value by adjustment. See "adjustment of VCO" contents
2.ATT ON/OFF	Do not adjust this item.

2.V/C (VIDEO / CHROMA) (▭ is adjustment not to required)

Colour system / Setting item	Initial setting value		
	PAL	SECAM	NTSC
1. R. GAIN	-15	←	←
2. G. GAIN	-15	←	←
3. B. GAIN	-15	←	←
4. BRIGHT	20	←	←
5. CONTRAST	0	←	←
6. COLOUR	-10	←	←
7. HUE	—	—	011
8. SHARP	0	←	←
9. VCO ADJUSTMENT	Automatically optimized after adjustment		
10. VIDEO AGC	00	←	←
11. SYNC SLICE	+07	←	←
12. A. MOVIE	01	←	←

3.AUDIO (Do not adjust)

Setting item	Variable range	Initial setting value (Fixed value)
1. ERR LIMIT	00H~FFH	10
2. A2 ID THR	00H~FFH	19

4.DEF (▭ is adjustment not to required)

Setting item	VALUE
	FULL
	50Hz p
1. V-SHIFT	-03
2. V-SIZE	00
3. H-CENT	-06
4. H-SIZE	00

5.VSM PRESET

VSM preset mode / Setting item	COOL	NORMAL	WARM
1. CONT.	+12	+12	00
2. BRIGHT	00	00	00
3. SHARP	-12	-12	-12
4. COLOUR	00	00	-01
5. HUE	00	00	00
6. R. GAIN	00	00	00
7. G. GAIN	00	00	00
8. B. GAIN	00	00	00

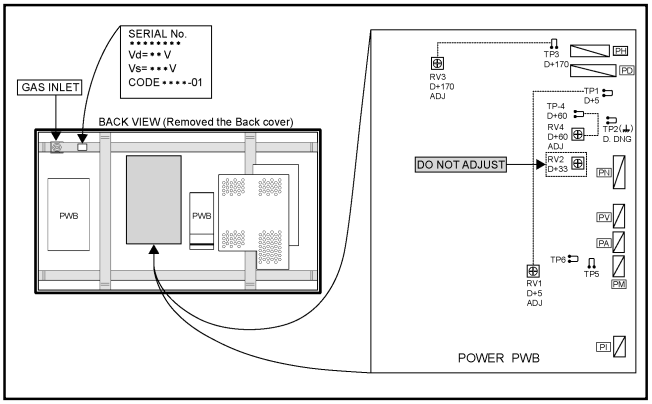
7.PIP (▭ is adjustment not to required)

Setting item	Initial setting value		
	PAL	SECAM	NTSC
1. PIP VCO ADJ	—	—	—
2. PIP VID AGC	00	←	←
3. PIP SNC SLI	+07	←	←

ADJUSTMENT

■ MONITOR

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of POWER VOLTAGE	DC voltmeter Signal generator	TP-1 (+5V) TP-2 (⏚) TP-3 (+170V) TP-4 (+60V)	VR1 (+5) VR3 (+170V) VR4 (+60V)	✱ **Adjustment of Vs(+170V) voltage.** 1. Input the colour bar signal to RGB input terminal. 2. Connect the digital voltmeter across TP3 and TP2 (⏚). 3. Adjust the VR3 to set the voltage within ±1V of the voltage (Vs as shown on the SERIAL LABEL) designed for the PDP module. ✱ **Adjustment of Vd(+60V) voltage.** 1. Input the colour bar signal to RGB input terminal. 2. Connect the digital voltmeter across TP4 and TP2 (⏚). 3. Adjust the VR4 to set the voltage within ±1V of the voltage (Vs as shown on the SERIAL LABEL) designed for the PDP module. ✱ **Adjustment of +5V voltage.** 1. Input the colour bar signal to RGB input terminal. 2. Connect the digital voltmeter across TP1 and TP2 (⏚). 3. Confirm that the voltage of the TP1 and TP2 (⏚) have become 5.1V±0.1V. If not, adjust the VR1 at the +5V ADJ of the POWER PWB so that the voltage become 5.1V±0.1V.



■RECEIVER

Checking of AFT CW VCO	Remote control unit		1.VCO	● Under normal conditions, no adjustment is required confirmation adjustment. 1. Select 1.IF from the SERVICE MENU. 2. Then select 1.VCO from the 1.IF SERVICE MENU (Fig.1). 3. Receive any broadcast (55.75MHz or 216.00MHz is best). 4. In the VCO adjustment screen, the yellow allows point (Fig.2) to the characters. Check the yellow allow position where pointed to the character from “ABOVE REF” to “BELLOW REF” (Fig.2 & Fig.3). ✱ The arrow position menu AFC voltage level.

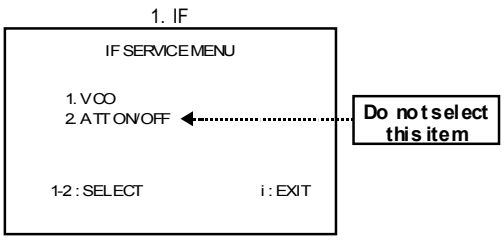


Fig.1

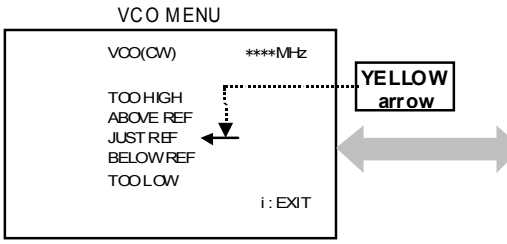


Fig.2

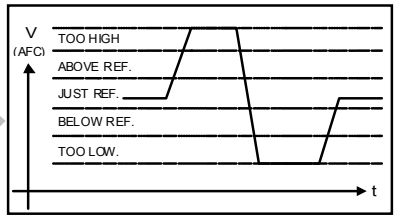


Fig.3

VSM PRESET SETTING

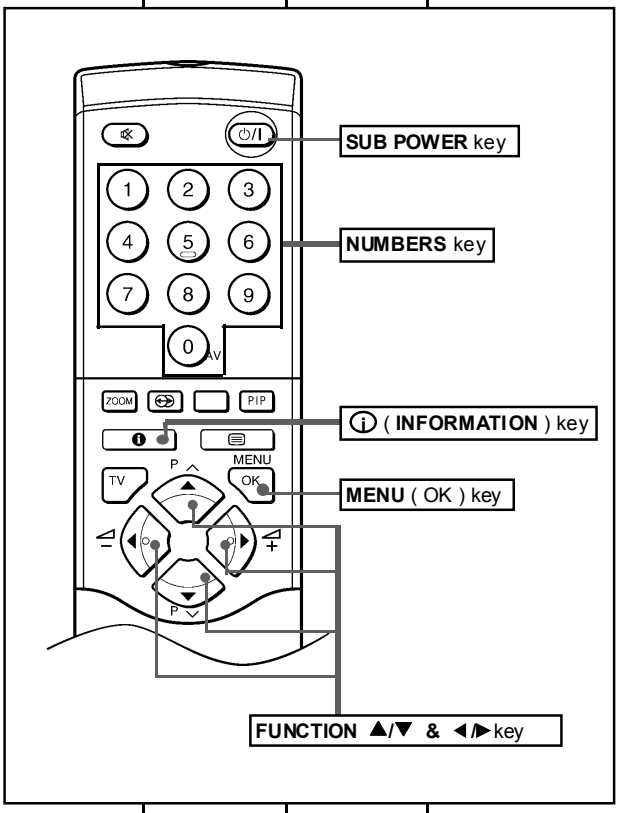
Item	Measuring instrument	Test point	Adjustment part	Description
Setting of VSM PRESET	**Remote control unit**		**1. CONT.** **2. BRIGHT** **3. SHARP** **4. COLOUR** **5. HUE** **6. R. GAIN** **7. G. GAIN** **8. B. GAIN**	1. Press the MENU (OK) key and select COOL mode with the remote control unit. 2. Select 5.VSM PRESET from the SERVICE MENU. 3. Adjust the FUNCTION ▲/▼ and ◀/▶ key to bring the set values of 1.CONT ～ 8.B GAIN to the initial setting values as shown in the before table. 4. Press the MENU key and memorize the set value. 5. Respectively select the VSM PRESET mode for NORMAL and WARM, and make similar adjustment as in 3 above. 6. Press the MENU (OK) key and memorize the set value. ★Refer to OPERATING INSTRUCTIONS for the PICTURE MODE.

V/C (VIDEO/CHROMA) CIRCUIT ADJUSTMENT

- **The setting (adjustment) using the REMOTE CONTROL UNIT is made on the basis of the initial setting values.**
- **The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of WHITE BALANCE (High-Light)	**Signal generator** **Remote control unit**		**1. R. GAIN** **2. G. GAIN**	●Set the PICTURE MODE to NORMAL. 1. Receive a black and white signal (colour off). 2. Select 2. V/C from the SERVICE MENU. 3. Modify 1.R.GAIN and 2.G.GAIN value to set the white balance (high light). 4. Press the MENU (OK) key and memorize the set value. 5. Change the contrast and brightness up and down with the remote control unit from Low–light to High–light, and check that the tracking of the white balance is good.
Adjustment of SUB BRIGHT	**Remote control unit**		**4.BRIGHT**	1. Receive any broadcast. 2. Select 2.V/C from the SERVICE MENU. 3. Select 4.BRIGHT with the FUNCTION ▲/▼ key. 4. Set the initial setting value with the FUNCTION ◀/▶ key. 5. If the brightness is not the best with the initial setting value, make fine adjustment until you get the best brightness. 6. Press the MENU (OK) key and memorize the set value.
Adjustment of SUB CONTRAST	**Remote control unit**		**5.CONTRAST**	1. Receive a PAL colour bar signal. 2. Switch the sub power SW to OFF & ON. 3. Select 2.V/C from the SERVICE MENU. 1. Select 5.CONTRAST with the FUNCTION ▲/▼ key. 5. Set the initial setting value with the FUNCTION ◀/▶ key. 6. If the contrast is not the best with the initial setting value, make fine adjustment until you get the best contrast. 7. Press the MENU (OK) key and memorize the set value.

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR I	**Remote control unit**		**6.COLOUR**	**[Method of adjustment without measuring instrument]** **< PAL COLOUR >** 1. Receive PAL broadcast. 2. Select 2.V/C from the SERVICE MENU. 3. Select 6.COLOUR with the FUNCTION ▲/▼ key. 4. Set the initial setting value for PAL COLOUR with the FUNCTION ◀/▶ key. 5. If the colour is not the best with the initial set value, make fine adjustment until you get the best colour. 6. Press the MENU (OK) key and memorize the set value. **< SECAM COLOUR >** 1. Receive a SECAM broadcast. 2. Make fine adjustment of SECAM COLOUR in the same manner as for above. **< NTSC 3.58 COLOUR >** 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal from the EXT terminal. 2. Make similar fine adjustment of NTSC 3.58 COLOUR in the same manner as for above. **< NTSC 4.43 COLOUR >** 1. Input a NTSC 4.43MHz COMPOSITE VIDEO signal from the EXT terminal. 2. Make similar fine adjustment of 4.43 COLOUR in the same manner as for above.



Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB COLOUR Ⅱ	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-R** **TP-E(⏚)** **[CRT SOCKET PWB]**	**6.COLOUR**	**[Method of adjustment using measuring instrument]** **< PAL COLOUR >** 1. Receive a PAL full field colour bar signal (75% white). 2. Select 2.V/C from the SERVICE MENU. 3. Select 6.COLOUR with the FUNCTION ▲/▼ key. 4. Set the initial setting value of PAL COLOUR with the FUNCTION ◄/► key. 5. Connect the oscilloscope between TP-R and TP-E 6. Adjust PAL COLOUR and bring the value of **(A)** in the to illustration (Fig.1) to -140mV(W-R). 7. Press the MENU (OK) key and memorize the setting value.
				< SECAM COLOUR > 1. Receive a SECAM full field colour bar signal (75% white). 2. Set the initial setting value of SECAM COLOUR with the FUNCTION ◄/► key. 3. Adjust SECAM COLOUR and bring the value of **(A)** in the illustration (Fig.2) to -140mV(W-R). 4. Press the MENU (OK) key and memorize the setting value.
				< NTSC 3.58 COLOUR > 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Set the initial setting value of NTSC 3.58 COLOUR with the FUNCTION ◄/► key. 3. Adjust NTSC 3.58 COLOUR and bring the value of **(B)** of the illustration (Fig.1) to -140mV(W-B). 4. Press the MENU (OK) key and memorize the setting value.
				< NTSC 4.43 COLOUR > 1.When NTSC3.58 adjustment has done, then NTSC4.43 adjustment will be automatically set at the respective values.

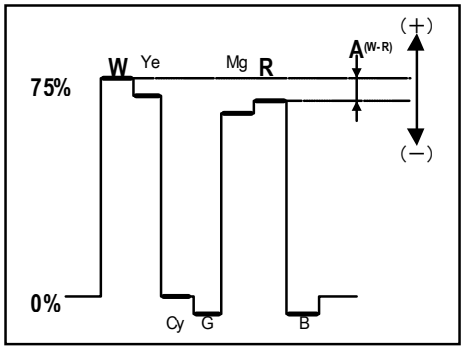


Fig. 1

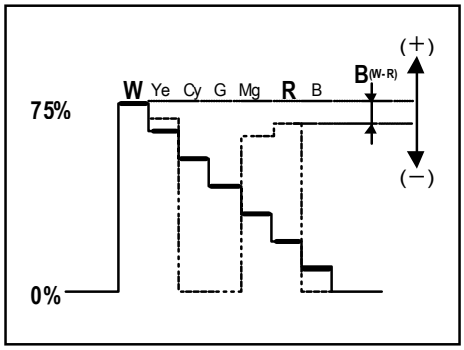
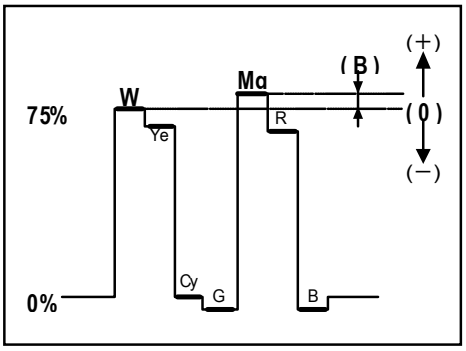
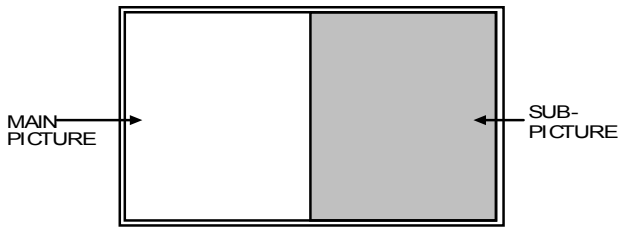


Fig. 2

Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of SUB HUE Ⅰ	**Remote control unit**		**7. HUE**	**[Method of adjustment without measuring instrument]** **< NTSC 3.58 HUE >** 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Select 2.V/C from the SERVICE MENU. 3. Select 7.HUE with the FUNCTION ▲/▼ key. 4. Set the initial setting value of NTSC 3.58 HUE with the FUNCTION ◀/▶ key. 5. If you cannot get the best HUE with the initial setting value, make fine adjustment until you get the best HUE. 6. Press the MENU (OK) key and memorize the set value. **< NTSC 4.43 HUE >** 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.
Adjustment of SUB HUE Ⅱ	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-R** **TP-E(⏚)** **[CRT SOCKET PWB]**	**7. HUE**	**[Method of adjustment using measuring instrument]** **< NTSC 3.58 HUE >** 1. Input a NTSC 3.58MHz COMPOSITE VIDEO signal (full field colour bar with 75% white) from the EXT terminal. 2. Select 2.V/C from the SERVICE MENU. 2. Select 7.HUE with the FUNCTION ▲/▼ key. 4. Set the initial setting value of NTSC 3.58 HUE with the FUNCTION ◀/▶ key. 5. Connect the oscilloscope between TP-R and TP-E 6. Adjust NTSC 3.58 HUE to bring the value of **(B)** in the illustration to30mV(W-Mg). 7. Press the MENU (OK) key and memorize the setting value **< NTSC 4.43 HUE >** 1. When NTSC 3.58 is set, NTSC 4.43 will be automatically set at the respective values.



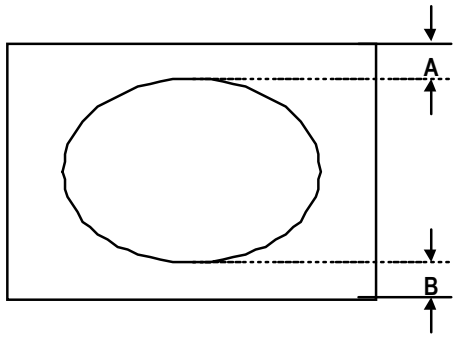
Item	Measuring instrument	Test point	Adjustment part	Description
Checking of MAIN COLOUR DECODER VCO	**Signal generator** **Remote control unit**		**9. VCO**	1. Input a PAL half colour bar signal (75% white) from the EXT terminal. 2. Select 2. V/C from the SERVICE MENU. 1. Select 9. VCO adjustment with the FUNCTION ▲/▼ key. 4. Press the MENU (OK) key then automatically optimized.
Checking of PIP COLOUR DECODER VCO	**Signal generator** **Remote control unit**		**7. PIP**	1. Select 7. PIP from the SERVICE MENU. 2. Receiver a PAL half colour bar (75% white) signal for the SUB-PICTURE (Right-Side picture) 3. Select 1. PIP VOC ADJ. with the FUNCTION ▲/▼ key. 4. Press the MENU (OK) key then automatically optimized.

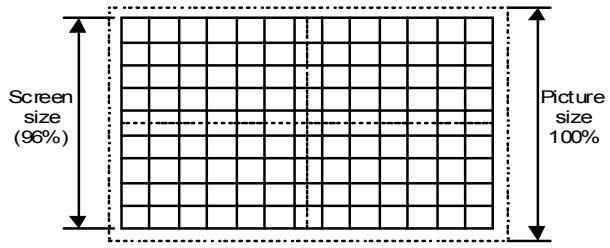


DEFLECTION CIRCUIT ADJUSTMENT

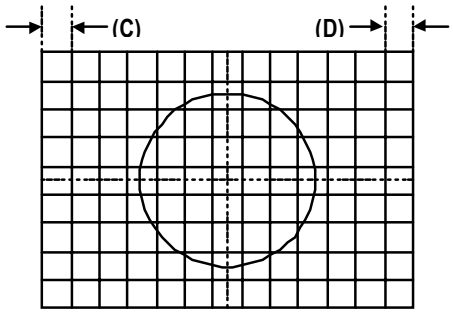
- **When the FULL mode has been established, the setting of other modes will be done automatically. However, if the picture quality has not been optimized, adjust each mode again, respectively.**
- **There are 5 aspect modes (①FULL, ②PANORAMIC, ③REGULAR, ④16:9 ZOOM, ⑤14:9 ZOOM) of the adjustment depending upon the kind of signals.**
- **The adjustment using the remote control unit is made on the basis of the initial setting values.**
- **The setting values which adjust the screen to the optimum condition can be different from the initial setting values.**

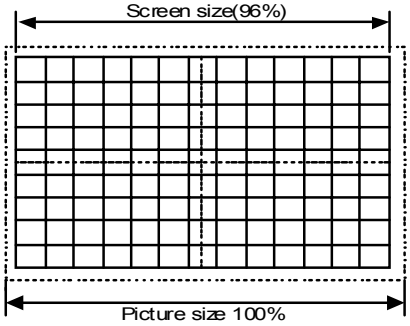
Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of V. POSITION	**Signal generator** **Remote control unit**		**1.V- SHIFT**	●Set the ASPECT MODE to FULL. 1. Receive a circle pattern signal. 2. Select 4.DEF from the SERVICE MENU. 3. Select 1.V-SHIFT with the FUNCTION ▲/▼ key. 4. Adjust V-SHIFT to make **A = B**. 5. Check the adjustment condition in other aspect mode. If it is a wrong condition, re-adjust in "FULL" mode with 1. V-SHIFT. 6. Press the MENU (OK) key and memorize the set value.
Adjustment of V. SIZE	**Signal generator** **Remote control unit**		**2.V-SIZE**	7. Receive a crosshatch signal. 8. Select 2.V-SIZE and set the initial setting value to zero(0). 9. Adjust the V-SIZE to the vertical screen size of the picture becomes the value given figure. 10. Press the MENU (OK) key and memorize the set value.





Item	Measuring instrument	Test point	Adjustment part	Description
Adjustment of H. POSITION	**Signal generator** **Remote control unit**		**3.H-CENT.**	11. Receive a crosshatch with circle pattern signal. 12. Select 3.H-CENT and set the initial setting value. 13. Adjust H-CENT to make **C=D**. 14. Press the MENU (OK) key and memorize the set value.
Adjustment of H. SIZE	**Signal generator** **Remote control unit**		**4.H-SIZE**	15. Receive a crosshatch pattern signal. 16. Select 4.H-SIZE and set the initial setting value to zero(0). 17. Adjust the H-SIZE and make sure that the horizontal screen size of the picture is in the table bellow. 18. Press the MENU (OK) key and memorize the set value. 19. Input the NTSC VIDEO signal (60Hz) from the EXT terminal, and make sure that the horizontal screen size of the picture becomes the value given figure. 20. Press the MENU (OK) key and memorize the set value.





TROUBLESHOOTING

MONITOR UNIT DOES NOT WORK

(When the LED blinks with RED and GREEN alternatively)

1) Press the RESET SW while the power is turned off.
2) Then, wait for two seconds after turning the power on.
3) Tune the power off after two seconds.
4) Release the RESET PW.
5) The main unit of PDP will be activated when the power is tuned on.